UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,829	07/14/2003	Douglas B. Meyer	5681-41100	5944

35690 7590 07/23/2007

MEYERTONS, HOOD, KIVLIN, KOWERT & GOETZEL, P.C.
P.O. BOX 398
AUSTIN, TX 78767-0398

EXAMINER
ROMANO, JOHN J

ART UNIT	PAPER NUMBER
2192	

MAIL DATE	DELIVERY MODE
07/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/618,829	MEYER ET AL.	
	Examiner	Art Unit	
	John J. Romano	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *May 14th, 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's amendment and response received May 14th, 2007 responding to the February 14th, 2007, Office action provided in the rejections of claims 1-30, wherein claims 1-30 remain pending in the application and which have been fully considered by the examiner.

Applicant's arguments and amendments with respect to §101 rejection of claim 15 are persuasive. Accordingly, the §101 rejection of claim 15 is withdrawn.

Applicant's arguments and response with respect to objection to the drawing of Figure 1 are persuasive. Accordingly, the objection is withdrawn and the drawings are accepted.

Applicant arguing for the claims being patentable over *the prior art* (see pages 10-15 of the amendment and response) are not persuasive, as will be addressed under Prior Art's Arguments – Rejections section at item 2 and the claim rejections below. Accordingly, Applicants' arguments necessitated additional clarifications. Thus, the rejection of the claims over prior art in the previous Office action is maintained in light of the necessitated additional clarifications provided hereon and **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Prior Art's Arguments – Rejections

2. Applicant's arguments filed May 14th, 2007, in particular on pages 13-14, have been fully considered but they are not persuasive. For example,

(A) In regard to Applicants argument with respect to claim 16, wherein Applicant equates the system firmware code (118) to the application software executing on the service processor (emphasis added – see response page 13 of 15, second paragraph), the Examiner respectfully disagrees with Applicant's characterization of prior art teachings. It is noted that the firmware code 118 argued by Applicant is only part of the application software. The application software as expressly disclosed by *Crowell:*

> "executed to implement the embodiments of the invention, may be part of an operating system or a specific application, component, program, module, object, or sequence of instructions" (emphasis added - *See Crowell*, paragraph [0025], lines 1-4).

Here, the specific application, is interpreted to correspondingly execute the firmware code (*See* Figure 2, 118) to configure hardware (*See* Figure 2, 210) and then analyze the behavior. Thus, as also explicitly disclosed in paragraph [0023], *Crowell* discloses:

> "FIG. 1 shows an exemplary computer system 100, in which embodiments of the present invention may be utilized. For example, embodiments of the present invention may be implemented as a program product for use with the system 100, to debug firmware code 118 generally designed to configure one or more of the illustrated hardware components." (emphasis added).

(B) In response to applicant's argument that "Applicant fails to see how the firmware code which has the capability of manipulating and configuring the hardware can be both the application software and the executable form of program instructions recited in Applicant's claim 16" (*See* response, page 13, last paragraph), the examiner respectfully again disagrees with applicant's characterization of the cited prior art. It is noted that the application software is interpreted as the specific application implemented by being executed as a program product on the system of Figure 1, as expressly disclosed above in section (A). The firmware 118, is interpreted as separate program instructions called by the application software and thereby are "executed in response to the application software" as claimed in claim 16.

(C) In regard to Applicants argument that neither Crowell nor Huang teaches or suggests "wherein said service processor is further configured to access an executable form of program instructions for manipulating said system processor and said client form once consistent state to a next consistent state" (emphasis in original - See page 14, second paragraph), the examiner notes that this argument is contradicting to Applicant's assertion. Even Applicant acknowledges by added emphasis (underline) to what Crowell teaches at paragraph [0034], Figure 3 step 304 states "Upon executing

the firmware code to configure hardware" (See response, page 13, paragraph [0034] quotation with emphasis by Applicant).

(D) In regard to the argument that *Crowell* does not teach or suggest that the program instructions are independent of said specific information (See response, page 14, 2nd paragraph), the Examiner respectfully disagrees. The program instructions taught by *Crowell* (See paragraph [0025]) to implement the embodiments of the invention are not specific to hardware information.

However, even arguably, *Crowell* expressly discloses and illustrates "EXECUTE FIMRWARE CODE TO CONFIGURE HARDWARE (MODIFY SMART BUFFERS)" in box 210 of Figure 2, wherein the firmware code is executed in response to executing the software application implementing *Crowell's* method (See paragraph 0025). Here, the firmware code calls a software buffer built corresponding to a specific hardware definition language. However, once built, the firmware code employing the smart buffer no longer depends on the specific hardware. Rather, as also disclosed by applicant's specification (See Figure 4, 410 + 415), the smart buffer is indirectly using specific operations (behavioral definition); particularly applicant's similarly define an operation dependent on specific hardware (OD's representing actual hardware – See Figure 4, 410) and only then translate the operation description into executable code for use in the runtime environment 415 by specifically implementing a specific operation by calling specific information (See specification, page 29, paragraph [0080], lines 16-29). At most, the "independent" executable code 415, is only indirectly related to specific operation definitions and not truly independent as claimed. In particular, as expressly

disclosed (paragraph [0080], lines 18-22) by applicant "ODs are typically written using information available from various reference manuals and from the hardware design teams. For example, the definitions of all bus topologies may be used. The design tool output, in ODL, of hardware specific information such as CSR names, field names, etc. is used since it is an ODL representation of the actual hardware design."

That is to say, it is a representation of the hardware design, as is the firmware code employing the smart buffers, which specific implementations (behavioral definitions) and as such both "program instructions are independent of said specific information". Also, it should be noted, that applicant's logic also applies the same process indirectly. As such, if applicant contends the logic is invalid, this would also apply to applicants claim language.

Accordingly, claim 16 is rejected for the reasons given herein-above and below in the claim rejections and the rejection is maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims **1-5, 7, 9, 10, 12, 15-21, 23, 25, 26** and **28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Crowell et al., US 2004/0215440 (hereinafter **Crowell**) in view of Huang et al., US 5,267,246 (hereinafter **Huang**).

In regard to claim **16**, **Crowell** discloses:

- "*A computer system comprising: a system processor configured to execute instructions associated with user software; a client coupled to said system processor via a system interconnect; and a service processor coupled to said system processor and to said client via a… bus, wherein said service processor is configured to execute application software for configuring said computer system into one or more domains and for performing diagnostics; wherein said service processor is further configured to…*" (E.g., see Figure 1 & paragraphs [0023] + [0027]), wherein a system comprising a service processor 113, system processor(s) 112, other networked computers 146 (client) for configuring one or more hardware components is taught.
- "*…access an executable form of program instructions for manipulating said system processor and said client from one consistent state to a next consistent state…*" (E.g., see Figure 2 & [0043]), wherein the firmware is loaded 206 by a software application (see paragraph [0025] to configure the hardware state.
- "*…wherein said program instructions describe a sequence of one or more transactions for manipulating said system processor and said client…*" (E.g., see Figure 1 & paragraph [0022]), wherein, the firmware called by the software instructions configures the hardware, optionally using smart buffers may call specialized functions to capture the cause

and effect behavior (manipulate) of the actual registers of the targeted hardware, wherein the firmware is any set of executable code designed to interface (manipulate) with (e.g., read, write, modify) the hardware components.

- "...*wherein said program instructions call one or more code segments that include specific information associated with said system processor and said client and wherein said program instructions are independent of said specific information*..." (E.g., see Figure 2 & paragraph [0035]), wherein the application is independent of the specific information , however the firmware is developed (202) in view of the hardware specifications (136), wherein a library of behavior definitions 134 based on the hardware specifications 136 develop behavioral models 204 which describe at the bit level the effect of modifying one register (e.g., control register) has on another register (e.g., a corresponding status register).
- "...*and execute said executable form of said program instructions in response to executing said application software*." (E.g., see Figure 2 & paragraph [0045]), wherein the firmware code is executed in response to the application software, to configure hardware (modify the registers), wherein paragraph [0025] additionally teaches translation and execution of the sequence of instructions.

But **Crowell** does not expressly disclose "maintenance bus" in a diagnostic environment. However, **Huang** discloses a maintenance bus via a support processor in order to test a system (Column 2, lines 4-15). **Crowell** and **Huang** are analogous art because they are both concerned with the same field of endeavor, namely, testing and configuration of a system with a service processor. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine **Huang's** service processor with **Crowell's** configuration process. The motivation to do so would have been to provide a system support adapter (SSA) between the service processor and the main processor which functions to interrogate the system as taught by **Huang** (E.g., see Column 2, lines 4-8).

In regard to claim **17**, the rejections of base claim **16** are incorporated. Furthermore, **Crowell** discloses:

- "*...include one or more respective control registers, wherein said respective control registers include one or more bits configured to control and indicate an operating state of said system processor and said client.*" (E.g., see Figure 1 & paragraph [0021]), wherein the firmware is any set of executable code designed to interface with (e.g., read, write, modify) the hardware components corresponding to resisters (e.g., status, control, and results registers) in the actual targeted hardware.

But **Crowell** and **Huang** do not expressly disclose "each include". However, it would have been obvious to one of ordinary skill in the art, at the time the invention was

made, to configure each and every processor included in a system that was modified or changed in order to perform complete diagnostics.

In regard to claim **18**, the rejections of base claim **17** are incorporated. Furthermore, **Crowell** discloses:

- "*...to read and write information within said one or more respective control registers of said system processor and said client.*" (E.g., see Figure 2 & paragraph [0035]), wherein behavioral models 204 which describe at the bit level the effect of modifying one register (e.g., control register) has on another register (e.g., a corresponding status register) is diagnosed by the firmware.

In regard to claim **19**, the rejections of base claim **16** are incorporated. Furthermore, **Crowell** discloses:

- "*...include one or more state machine implementations each including a plurality of states and wherein said plurality of states are effected in response to invocation of said one or more code segments.*" (E.g., see Figure 2 & paragraph [0035]), wherein behavioral models 204 which describe at the bit level the effect of modifying one register (e.g., control register) has on another register (e.g., a corresponding status register) is diagnosed by the firmware, wherein the behavioral models are described in the sequence of code called in the special functions and attached to the smart buffers (208).

But **Crowell** and **Huang** do not expressly disclose "each include". However, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to configure each and every processor included in a system that was modified or changed in order to perform complete diagnostics.

In regard to claim **20**, the rejections of base claim **16** are incorporated. Furthermore, **Crowell** discloses:

- "*...said specific information includes control register-specific information.*" (E.g., see Figure 2 & paragraph [0035]), wherein behavioral models 204 which describe at the bit level the effect of modifying one register (e.g., control register).

In regard to claim **21**, the rejections of base claim **20** are incorporated. Furthermore, **Crowell** discloses:

- "*...a control register name.*" (E.g., see Figure 1 & paragraph [0035]), wherein chip A has a Control Register (A_REG_C).

In regard to claim **23**, the rejections of base claim **21** are incorporated. Furthermore, **Crowell** discloses:

- "*...a control register field including one or more particular bits.*" (E.g., see Figure 1 & Paragraph [0038]), wherein the firmware code 118 sets bit 0 of Control Register (A_REG_C:0).

In regard to claim **25**, the rejections of base claim **16** are incorporated. Furthermore, **Crowell** discloses:

- "*...specific information associated with said system processor and said client is derived from an output of a design tool, wherein said output corresponds to a hardware definition language representation of said system processor and said client.*" (E.g., see paragraph [0007]), wherein output of a design tool (VHDL) corresponds to a hardware definition language representation of said system processor and said client.

In regard to claim **26**, the rejections of base claim **16** are incorporated.

Furthermore, **Crowell** discloses:

- "*...said program instructions include specifying an access operation on a control register without defining a specific bus route for conveying said operation.*" (E.g., see Figure 4A + 4B) & paragraph [0037]), wherein an access operation on a control register without a specific bus route is defined.

In regard to claim **28**, the rejections of base claim **16** are incorporated.

Furthermore, **Crowell** discloses:

- "*...written in a descriptive abstract programming language.*" (E.g., see Figure 6 & Column 12, lines 16-29), wherein.

But **Crowell** and **Huang** do not expressly disclose "*not directly compilable*". However, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to write the general behavioral definitions in pseudo-code (not

directly compilable) as is old and well known in the art, in light of teaching of any abstract programming language such as that taught by **Crowell** as addressed above.

In regard to claims **1-5, 7, 9, 10,** and **12**, this is a method version of the claimed system discussed above, in claims **16, 18-21, 23, 25, 26** and **28**, respectively, wherein all claimed limitations have also been addressed and/or cited as set forth above. For example, see **Crowell** (paragraph [0009]), wherein a method is disclosed.

In regard to claim **15**, this is a computer readable medium version of the claimed method discussed above, in claim **16**, wherein all claimed limitations have also been addressed and/or cited as set forth above. For example, see **Crowell** (Figure 1) wherein a computer readable medium is disclosed.

4. Claims **6, 8, 11, 13, 14**, **22, 24, 27, 29** and **30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Crowell et al., US 2004/0215440 (hereinafter **Crowell**) in view of Huang et al., US 5,267,246 (hereinafter **Huang**) and further in view of "The Design and Evolution of C++" by Bjarne Stroustrup (hereinafter "**C++**").

In regard to claims **22**, the rejections of base claim **21** are incorporated. It would have been obvious to one of ordinary skill in the art, at the time the invention was made to include a string literal representation of a number evaluated as an integer value and translate that into an ascii character representation of said integer in light of old and well known object oriented principles and programming practices in order to achieve the known benefits of such languages. (E.g., see **C++**, pgs 158-159). Therefore, it would have been obvious to "*...program instructions include specifying said control register*

name using an integer arithmetic expression that is evaluated as an integer value and translated into a character representation of said integer value." Further motivation to combine object oriented principles with **Crowell** and **Huang's** method was suggested by **Crowell's** disclosure of hardware modeling (E.g., see Figure 2, box 136 + 134).

In regard to claims **24** and **27**, the rejections of base claims **23** and **16** are incorporated. Furthermore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to store a value in a storage variable and have that value accessible by subsequent instructions, (E.g., see **C++**, pgs 158-159). Thus, it would have been obvious to "*...include storing a value in a storage variable during a transaction, wherein said value is accessible by an instruction executed subsequent to completion of said transaction*."

In regard to claim **29**, the rejections of base claim **16** are incorporated. It would have been obvious to one of ordinary skill in the art, at the time the invention was made to correspond different objects modeled with unique classes and unique names with an appropriate extension appended in light of old and well known object oriented principles and programming practices. (E.g., see **C++**, pgs 316-325). Therefore, it would have been obvious to "*...said specific information associated with particular hardware components is derived from a computer information model (CIM) representation by associating each particular hardware component with a CIM class having a CIM class name and creating, for each CIM class, a corresponding unique type by appending "_cim_t" to said CIM class name*."

In regard to claim **30**, the rejections of base claim **16** are incorporated. It would have been obvious to one of ordinary skill in the art, at the time the invention was made to have different classes call the same method in light of old and well known object oriented principles and programming practices. (E.g., see **C++**, pgs 316-325). Therefore, it would have been obvious to include "*...a hardware function programming interface type is specified that corresponds to a particular partition of functionality within a given hardware component type, wherein two identically named code segments have a substantially same semantic effect and different implementations when called by two different hardware function programming interfaces.*"

In regard to claims **6, 8, 11, 13,** and **14**, this is a method version of the claimed system discussed above, in claims **22, 24, 27, 29** and **30**, respectively, wherein all claimed limitations have also been addressed and/or cited as set forth above. For example, see **Crowell** (paragraph [0009]), wherein a method is disclosed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Romano whose telephone number is (571) 272-3872. The examiner can normally be reached on 8-5:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JJR

TUAN DAM
SUPERVISORY PATENT EXAMINER